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(71) 出願人 000005821

松下電器産業株式会社

大阪府門真市大字門真1006番地

(72) 発明者 森 昭寿

神奈川県横浜市港北区綱島東四丁目3番1

号 松下通信工業株式会社内

(72) 発明者 豊田 隆一

神奈川県横浜市港北区綱島東四丁目3番1

号 松下通信工業株式会社内

(74) 代理人 100099254

弁理士 役 昌明 (外3名)

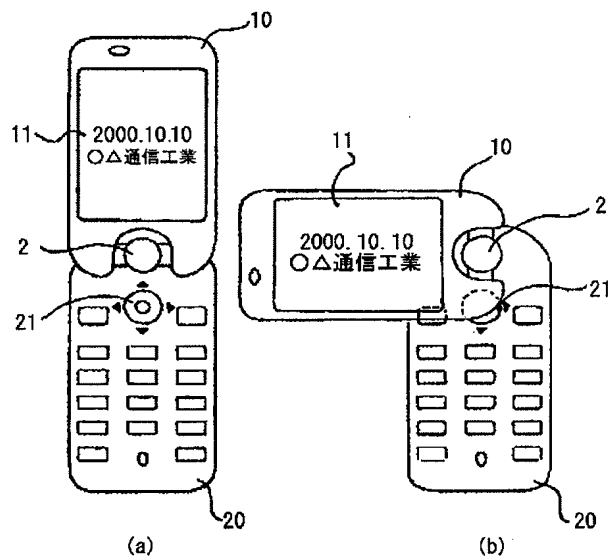
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(54) 【発明の名称】 折り畳み式携帯型電子機器

(57) 【要約】

【課題】 機器の持ち方や用途により第1筐体と第2筐体との相対角度を変えても、その角度に合わせて表示方向を切り換えることを可能にし、また第1筐体と第2筐体の位置関係に関わらず、良好な操作性を確保するようにした折り畳み式携帯型電子機器を提供する。

【解決手段】 受話部及び表示部11を備える第1筐体10と送話部を備える第2筐体20とを、ヒンジにより相互に折り畳み可能に連結し、さらに受話部または送話部の表面に略垂直な回転軸2の回りに回転可能に構成された折り畳み式携帯型電子機器において、第1筐体10が機器を開いた状態あるいは閉じた状態から回転した時に、その回転角度と機器の保持角度によって、第1筐体10上の主表示部11の表示方向を切り換えられるようにしたものである。



## 【特許請求の範囲】

【請求項 1】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、軸回りに回転して第 1 筐体と第 2 筐体とのなす角が 90° となった時に、表示部の表示方向を回転前の方向から 90° 切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器。

【請求項 2】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、第 1 筐体が反転するように閉じた時に、表示部の表示方向を上下に切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器。

【請求項 3】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、第 1 筐体が反転するように閉じた状態で、表示部の方向が縦長から横長になるように、あるいは横長から縦長になるように持ち替えた時に、表示部の表示方向を 90° 切り換えるようにしたことを有することを特徴とする折り畳み式携帯型電子機器。

【請求項 4】 表示部を備える第 1 筐体と、テンキーや選択キーなどからなる操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、前記第 2 筐体に設けられた選択キーを第 1 選択キーとしたとき、操作部の表面に垂直な軸の回りに回転した第 1 筐体により覆われない位置に第 2 選択キーを有することを特徴とする折り畳み式携帯型電子機器。

【請求項 5】 表示部を備える第 1 筐体と、テンキーや選択キーなどからなる操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、操作部の表面に略垂直な回転軸上に選択キーを有することを特徴とする折り畳み式携帯型電子機器。

【請求項 6】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、表示部もしくは操作部の表面に略垂直な軸回りに関して、所定の回転角度において回転規制機能を有することを特徴とする折り畳み式携帯型電子機器。

【請求項 7】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部

もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、表示部もしくは操作部の表面に略垂直な軸回りに関して、所定の回転角度において回転停止機能を有することを特徴とする折り畳み式携帯型電子機器。

【請求項 8】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、第 1 筐体の主表示部の反対側に副表示部を有することを特徴とする折り畳み式携帯型電子機器。

【請求項 9】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成され、通信機能を有する折り畳み式携帯型電子機器において、第 1 筐体上の主表示部が第 2 筐体の操作部に対して反対側になるように開いて配置された状態で、スピーカとレシーバの機能を切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器。

【請求項 10】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成され、通信機能を有する折り畳み式携帯型電子機器において、通信機能だけを使用しないモードに切り換え可能としたことを特徴とする折り畳み式携帯型電子機器。

【請求項 11】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成され、通信機能を有する折り畳み式携帯型電子機器において、第 1 筐体側に発信及び終話に関わる機能ボタンを有することを特徴とする折り畳み式携帯型電子機器。

【請求項 12】 表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、軸回りに回転して第 1 筐体と第 2 筐体とのなす角に応じて、表示部の表示形態を切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】 本発明は、携帯電話や携帯情報端末などの携帯型電子機器、特に表示部を備える第 1 筐体と操作部を備える第 2 筐体とを、表示部もしくは操作部の表面に略垂直な軸回りに相互に回転可能にした折り畳み式携帯型電子機器に関し、表示部の向きに合わせて表示部の表示方向を切り換え、また操作性を確保するようにしたものである。

## 【0002】

【従来の技術】従来の折り畳み式携帯型電子機器、例えば折り畳み式携帯電話では、図13に示されるように、受話部および表示部を有する第1筐体10と送話部および操作部を有する第2筐体20とを、ヒンジ1で連結し上下方向に開閉可能にされており、縦長の筐体に対して表示面積をできる限り大きくとるよう表示部形状が縦長になっており、また操作部が第2筐体20上の開閉軸付近に配置されているものが一般的である。

【0003】

【発明が解決しようとする課題】しかしながら、画像の送受信や録画・再生を行なう場合、縦長の表示部に横長の画像を表示する方法では、表示面積を十分に利用することができないという課題があった。

【0004】また、第1筐体を操作部に略垂直な軸の回りに回転させると、第1筐体の一部が選択キーを覆うため、選択キーの配置が制限され小形化ができないという課題があった。

【0005】本発明は、上記のような課題に鑑み、機器の表示方向や持ち方により第1筐体と第2筐体との相対角度を変えても、その角度に合わせて表示方向を切り換えることを可能にし、また第1筐体と第2筐体の位置関係に関わらず、良好な操作性を確保するようにした折り畳み式携帯型電子機器を提供することを目的とする。

【0006】

【課題を解決するための手段】本願の請求項1に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、この軸回りに回転し第1筐体と第2筐体とのなす角が90°となった時に、表示部の表示方向を回転前の方向から90°切り換えるようにしたことを特徴とする折り畳み式携帯型電子としたものである。

【0007】この構成によれば、例えば携帯電話のような縦長の画面に横長の画像を表示する場合、第1筐体を90°回転させた時には横長になった主表示部に適合して表示を横長に切り換えることにより、主表示部の表示領域を最大限に利用し、使用者に見やすい画像を提供することができる。

【0008】また、本願の請求項2に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、第1筐体が反転するように閉じた時に、表示部の表示方向を上下に切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものである。

【0009】この構成によれば、開いた状態から第1筐体を反転させて閉じて、画面の方向が切り換わることにより、持ち替えることなくそのまま使い続けることが

できる。

【0010】また、本願の請求項3に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、表示部の方向が縦長から横長になるように、あるいは横長から縦長になるように持ち替えた時に、表示部の表示方向を90°切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものである。

【0011】この構成によれば、機器の持ち方と表示内容に対して最適な表示方向を選択することができる。

【0012】また、本願の請求項4に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、前記第2筐体に設けられた選択キーを第1選択キーとしたとき、操作部の表面に略垂直な軸の回りに回転した第1筐体により覆われない位置に第2選択キーを有することを特徴とする折り畳み式携帯型電子機器としたものである。

【0013】この構成によれば、例えば前記第1筐体が機器を開いた状態あるいは閉じた状態から90°回転させた時に第1筐体が従来の位置にある選択キーを覆う可能性が高くなるが、このような場合においても操作性を確保することができる。

【0014】また、本願の請求項5に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、操作部の表面に略垂直な回転軸上に選択キーを有することを特徴とする折り畳み式携帯型電子機器としたものである。

【0015】この構成によれば、第1筐体と第2筐体とが使用可能であるすべての位置関係において選択キーが必ず表面に現れているため、良好な操作性を確保することができる。

【0016】また、本願の請求項6に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、表示部もしくは操作部の表面に略垂直な軸回りに関して、所定の回転角度において回転規制機能を有することを特徴とする折り畳み式携帯型電子機器としたものである。

【0017】この構成によれば、回転軸の構造上、回転角度に制限がある場合に、第1筐体及び第2筐体が無理な角度まで回転しないように規制して回転軸を保護することができる。

【0018】また、本願の請求項7に記載の発明は、表

示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、表示部もしくは操作部の表面に略垂直な軸回りに関して、所定の回転角度において回転停止機能を有することを特徴とする折り畳み式携帯型電子機器としたものである。

【0019】この構成によれば、90°、180°などの使用頻度の高い第1筐体の位置において使用中に第1筐体が回転することなく停止し、安定して使用することができる。

【0020】また、本願の請求項8に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、第1筐体の主表示部の反対側に副表示部を有することを特徴とする折り畳み式携帯型電子機器としたものである。

【0021】この構成によれば、第1筐体と第2筐体を折り畳んだ状態でも、日付や時刻、電子メールや伝言の受信状況、電池容量を知ることができる。

【0022】また、本願の請求項9に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された通信機能を有する折り畳み式携帯型電子機器において、第1筐体上の主表示部が第2筐体の送話部に対して反対側になるように開いて配置された状態で、スピーカとレシーバの機能を切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものである。

【0023】この構成によれば、第1筐体と第2筐体を閉じた状態から操作部表面に垂直な軸回りに180°回転させた時、あるいは第1筐体を反転させ閉じた状態から開閉軸回りに開いた時に、電話として送受話することができる。

【0024】また、本願の請求項10に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2筐体の表面に略垂直な軸の回りに回転可能に構成された通信機能を有する折り畳み式携帯型電子機器において、通信機能だけを使用しないモードに切り換え可能としたことを特徴とする折り畳み式携帯型電子機器としたものである。

【0025】この構成によれば、電車内などの人の多い場所でも周囲の人に迷惑を掛けることなく、静止画像や動画の再生や、文書作成や電子メールの下書きなどを行なうことができる。

【0026】また、本願の請求項11に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに第1筐体または第2

筐体の表面に略垂直な軸の回りに回転可能に構成された通信機能を有する折り畳み式携帯型電子機器において、第1筐体側に発信及び終話に関わる機能ボタンを有することを特徴とする折り畳み式携帯型電子機器としたものである。

【0027】この構成によれば、第1筐体を反転させて閉じた状態においても、発信及び終話に関わる操作を行なうことができる。

【0028】また、本願の請求項12に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、軸回りに回転して第1筐体と第2筐体とのなす角に応じて、表示部の表示形態を切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものである。

【0029】この構成によれば、軸回りに回転して第1筐体と第2筐体とのなす角に応じて、表示部の表示形態を切り換えて、使用者に見やすい画像を提供することができる。

【0030】

【発明の実施の形態】以下、発明の実施の形態について、図1～図12を用いて説明する。

【0031】図1は、本発明の実施の形態に係る折り畳み式携帯型電子機器の構成を示す斜視図である。図1において折り畳み式携帯型電子機器は、主表示部11とスピーカ12などを有する第1筐体10と、選択キー21、発信ボタン23、終話ボタン24、テンキー25などの操作部とマイク22とを有する第2筐体20と、ヒンジ1と回転軸2とで構成されている。

【0032】そして第1筐体10と第2筐体20はヒンジ1により相互に折り畳み可能(A方向の回転による)に連結し、さらに操作部21の表面に略垂直な軸の回りに回転可能(B方向の回転による)に構成されている。

【0033】図2は、図1に示した折り畳み式携帯型電子機器の持ち方や第1筐体と第2筐体との角度による主表示部の表示方向が切り換えられている状態を示す図である。

【0034】図2(a)は第1筐体10を開いた状態における主表示部11の表示方向を示すものであり、図2

(b)は第1筐体10を第2筐体20に対して90°の角度に回転させた状態における表示方向を示すものであり、90°の角度は回転軸2に付加した回転検出機能(図示せず)により検出し、横長となった主表示部11に合わせて表示方向を横長に切り換えている。

【0035】図3は第1筐体10を反転させて主表示部11が表側となるように閉じた状態における表示方向を示すものであり、回転軸2に付加した回転検出機能(図示せず)により第1筐体10が180°回転していることを検出し、閉状態の検出機能(図示せず)を組み合わせるこ

とにより、第1筐体10の向きを検出し、使用者に正常に見えるように、表示が図2(a)と比較して上下方向に反転するように切り換えている。

【0036】図4は図3の状態から持ち方を変え、機器全体を90°回転させた状態において表示方向切り換えキー16を用いて、横長になった主表示部11に合わせて表示方向を横長に切り換えている。

【0037】図5は、図1に示した折り畳み式携帯型電子機器の構成において、第2選択キー(第2操作部)を有するように構成させたときの斜視図である。

【0038】第1筐体10が第2筐体20にある操作部の表面に略垂直な軸の回りに回転した場合、その角度によっては選択キー(第1選択キー)21を第1筐体10が覆い操作に支障をきたす可能性があるが、第1筐体10の回転により影響を受けない位置に第2選択キー14を有することにより、常に良好な操作性を確保することができる。

【0039】図6(a)及び図6(b)は、本発明の実施の形態に係る送話部の表面に略垂直な回転軸上に選択キーを有する折り畳み式携帯型電子機器の構成を示す図である。

【0040】図6(a)及び図6(b)に示すように、選択キー21'を回転軸2上に有することにより、常に良好な操作性を確保するとともに、従来、第2筐体20にあった選択キー21を削減することにより、第2筐体20を小型化することができる。

【0041】図7は、図1に示した折り畳み式携帯型電子機器の構成において、表示部もしくは操作部の表面に略垂直な軸回りに関して、所定の回転角度で回転規制機能を有することを示す、回転軸部分の拡大図である。

【0042】図7に示すように、回転軸上部3と回転軸下部4の各々に突起を設けることにより、回転軸上部3と回転軸下部4相互の回転を180°以上回転しないように制限することができる。

【0043】図8は、図1に示した折り畳み式携帯型電子機器の構成において、表示部もしくは操作部の表面に略垂直な軸回りに関して、所定の回転角度において回転停止機能を有することを示す、回転軸部分の拡大図である。

【0044】図8に示すように、回転軸上部3に90°間隔で凹部を、回転軸下部4に同じく90°間隔で凸部を設けることにより、回転軸上部3と回転軸下部4との回転が90°間隔で止まり、クリック感を発生させることができる。

【0045】図9は、図1に示した折り畳み式携帯型電子機器の構成において、第1筐体の主表示部の反対側に副表示部を有するように構成させたときの斜視図である。

【0046】図9に示すように、第1筐体10の主表示部11とは反対側に副表示部15を設けることにより、第1筐体10と第2筐体20を折り畳んだ状態でも、日付や時刻、

電子メールや伝言の受信状況、電池容量を知ることができる。

【0047】図10は、図1と同様の構成で通信機能を有する折り畳み式携帯型電子機器において、第1筐体10を反転させて開いた状態を示す図であり、(b)はこの状態の機器を反対側から見た図である。

【0048】図10(a)の状態では通信を行なう場合、マイク22を口元に持ってくると、第1筐体10の受話部では、通常、着信音を放音するレシーバが耳元にくるようにレシーバ13を配置しておくので、このような状態で使用する場合に、このレシーバ13の機能をスピーカに切り換えて通信を行なうことができる。また、図10(a)の状態を正常に戻した場合には、スピーカ12に切り換えたレシーバを本来の機能であるレシーバに戻せば正常な通信を行なうことができる。なお、図10(b)の状態では通信を行なうことは想定していない。

【0049】図11は、図1と同様の構成で通信機能を有する折り畳み式携帯型電子機器において、第1筐体10を反転させて閉じた状態を示し、表示方向切り換えキー16の長押しにより通信機能だけを使用しないモードに切り換えている様子を示す図である。なお、表示方向切り換えキー16の長押しに依らず、通信機能だけを使用しないモードに切り換える専用のキーを設けても良い。

【0050】静止画や動画画像を送受信あるいは録画再生する機能を有する折り畳み式携帯型電子機器においては、機器に保存された静止画や動画画像の再生を行なう機能が付加されるが、この機能においては通信機能を必要としないにも関わらず、画像再生中に着信する可能性があることから、電車などの人ごみで使用することができない。しかしながら、通信機能のみを使用しないモードに切り換えることにより、人ごみにおいても周囲に迷惑を掛けることなく、機器を使用することができる。

【0051】図12は、図1と同様の構成で通信機能を有する折り畳み式携帯型電子機器において、第1筐体側に発信及び終話に関わる機能ボタンを有するように構成させたときの正面図である。

【0052】図12に示すように、第1筐体10に発信ボタン23と終話ボタン24を設けることにより、第1筐体10を反転させて閉じた状態においても、発信及び終話の機能に関わる操作を行なうことができ、その分だけ第2筐体20側のキ一点数を減らすことにより、小型化あるいは他の機能を付加するスペースを確保することができる。

【0053】

【発明の効果】以上に説明したように本願の請求項1に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、軸回りに回転して第1筐体と第2筐体とのなす角が90°となった時に、表示部の表示方向を回転前の方向から90°

切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものであり、この構成により、例えば携帯電話のような縦長の画面に横長の画像を表示する場合、第1筐体を90°回転させた時には横長になった主表示部に適合して表示を横長に切り換え、主表示部の表示領域を最大限に利用し、使用者に見やすい画像を提供することができる。

【0054】また、本願の請求項2に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、第1筐体が反転するように閉じた時に、表示部の表示方向を上下に切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものであり、この構成により第1筐体を180°回転させた時に主表示部の表示を上下反転させることにより、機器を持ち替えることなくそのまま使い続けることができる。

【0055】また、本願の請求項3に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、表示部の方向が縦長から横長になるように、あるいは横長から縦長になるように持ち替えた時に、表示部の表示方向を90°切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、機器の持ち方と表示内容に対して最適な表示方向を選択することができる。

【0056】また、本願の請求項4に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、前記第2筐体に設けられた選択キーを第1選択キーとしたとき、操作部の表面に略垂直な軸の回りに回転した第1筐体により覆われない位置に第2選択キー操作部を有することを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、例えば第1筐体が機器を開いた状態あるいは閉じた状態から90°回転させた時に第1筐体が従来の位置にある選択キーを覆う可能性が高くなるが、このような場合においても操作性を確保することができる。

【0057】また、本願の請求項5に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、操作部の表面に略垂直な回転軸上に選択キーを有することを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、第1筐体と第2筐体とが使用可能であるすべての位

置関係において選択キー操作部が常に表面に現れているため、良好な操作性を確保することができる。

【0058】また、本願の請求項6に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、軸回りに回転させたときの所定の回転角度において回転規制機能を有することを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、回転軸の構造上、回転角度に制限がある場合に、第1筐体及び第2筐体が無理な角度まで回転しないように規制して回転軸を保護することができる。

【0059】また、本願の請求項7に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、軸回りに回転させたときの所定の回転角度においてクリック機能を有することを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、90°、180°などの使用頻度の高い第1筐体の位置において使用中に第1筐体が回転することなく、安定して使用することができる。

【0060】また、本願の請求項8に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、第1筐体の主表示部の反対側に副表示部を有することを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、第1筐体と第2筐体を折り畳んだ状態でも、日付や時刻、電子メールや伝言の受信状況、電池容量を知ることができる。

【0061】また、本願の請求項9に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成され、通信機能を有する折り畳み式携帯型電子機器において、第1筐体上の主表示部が第2筐体の送話部に対して反対側になるように開いて配置された状態で、スピーカとレシーバの機能を切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、第1筐体と第2筐体を閉じた状態から送話部表面に略垂直な軸回りに180°回転させた時、あるいは第1筐体を反転させ閉じた状態から開閉軸回りに開いた時に、電話として送受話することができる。

【0062】また、本願の請求項10に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成され、通

信機能を有する折り畳み式携帯型電子機器において、通信機能だけを使用しないモードに切り換え可能としたことを特徴とする折り畳み式携帯型通信機器としたものであり、この構成によれば、電車内などの人の多い場所でも周囲の人に迷惑を掛けることなく、静止画像や動画の再生や、文書作成や電子メールの下書きなどを行なうことができる。

【0063】また、本願の請求項11に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成され、通信機能を有する折り畳み式携帯型電子機器において、第1筐体側に発信及び終話に関わる機能ボタンを有することを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、第1筐体を反転させて閉じた状態においても、発信及び終話に関わる操作を行なうことができる。

【0064】また、本願の請求項12に記載の発明は、表示部を備える第1筐体と操作部を備える第2筐体とを、折り畳み可能に連結し、さらに表示部もしくは操作部の表面に略垂直な軸の回りに回転可能に構成された折り畳み式携帯型電子機器において、軸回りに回転して第1筐体と第2筐体とのなす角に応じて、表示部の表示形態を切り換えるようにしたことを特徴とする折り畳み式携帯型電子機器としたものであり、この構成によれば、軸回りに回転して第1筐体と第2筐体とのなす角に応じて、表示部の表示形態を切り換えて、使用者に見やすい画像を提供することができる。

【図面の簡単な説明】

【図1】本発明の実施の形態に係る折り畳み式携帯型電子機器の構成を示す斜視図、

【図2】図1に示した本発明の折り畳み式携帯型電子機器の構成において、第1筐体の回転に合わせて主表示部の表示方向が90°切り換えられている状態を示す図、

【図3】図1に示した本発明の折り畳み式携帯型電子機器の構成において、主表示部の表示方向が上下に切り換えられている状態を示す図、

【図4】図1に示した本発明の折り畳み式携帯型電子機器の構成において、主表示部の表示方向が90°切り換えられている状態を示す図、

【図5】図1に示した構成において、第2選択キーを有するように構成させたときの斜視図、

【図6】本発明の実施の形態に係る送話部の表面に略垂

直な回転軸上に操作部を有する折り畳み式携帯型電子機器において、(a)は主表示部の表示方向が正常位置にある状態を示す図、(b)は主表示部の表示方向が上下に切り換えられている状態を示す図、

【図7】図1に示した折り畳み式携帯型電子機器の構成において、所定の回転角度において回転規制機能を有するように構成させたときの拡大図、

【図8】図1に示した折り畳み式携帯型電子機器の構成において、所定の回転角度において回転停止機能を有するように構成させたときの拡大図、

【図9】図1に示した折り畳み式携帯型電子機器の構成において、第1筐体の主表示部の反対側に副表示部を有するように構成させたときの斜視図、

【図10】図1に示した本発明の折り畳み式携帯型電子機器において、(a)は第1筐体10を反転させて開いた状態を示す図、(b)はこの状態の機器を反対側から見た図、

【図11】図1に示した本発明の折り畳み式携帯型電子機器の通信機能だけを使用しないモードに切り換えている様子を示す図、

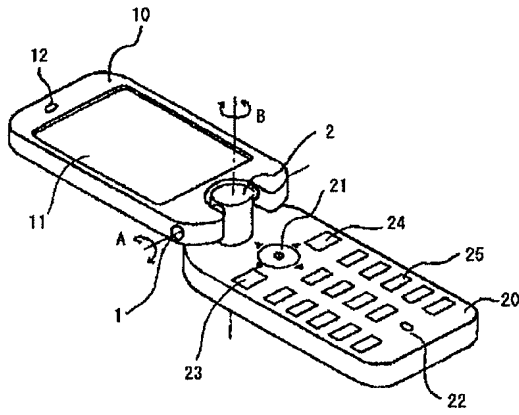
【図12】図1に示した折り畳み式携帯型電子機器の構成において、第1筐体側に発信及び終話に関わる機能ボタンを有するように構成させたときの斜視図、

【図13】従来の折り畳み式携帯型電子機器を示す図である。

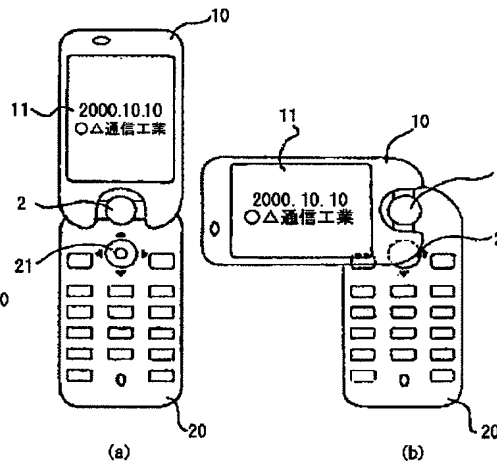
【符号の説明】

- 1 ヒンジ
- 2 回転軸
- 3 回転軸上部
- 4 回転軸下部
- 10 第1筐体
- 11 主表示部
- 12 スピーカ
- 13 レシーバ
- 14 第2選択キー
- 15 副表示部
- 16 表示方向切り換えキー
- 20 第2筐体
- 21 選択キー
- 22 マイク
- 23 発信ボタン
- 24 終話ボタン
- 25 テンキー

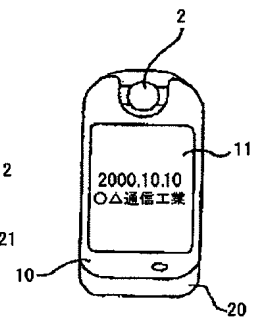
【図1】



【図2】

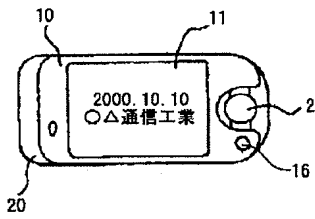


【図3】

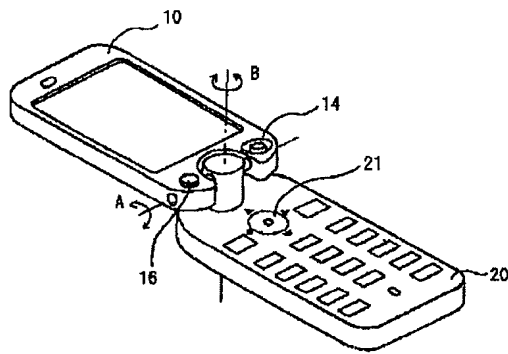


【図8】

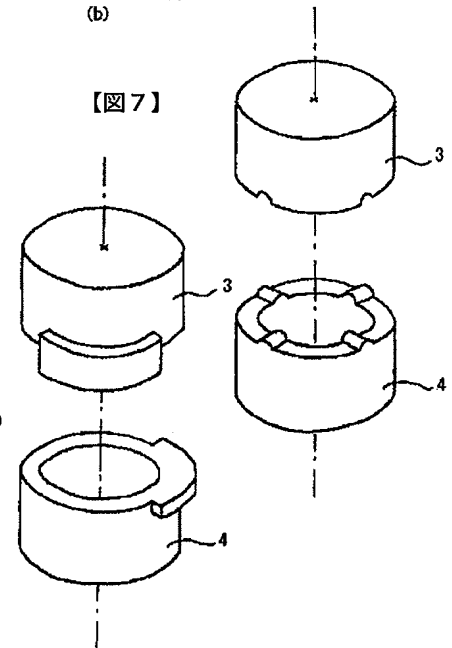
【図4】



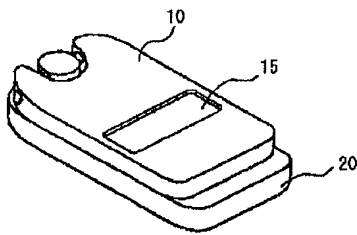
【図5】



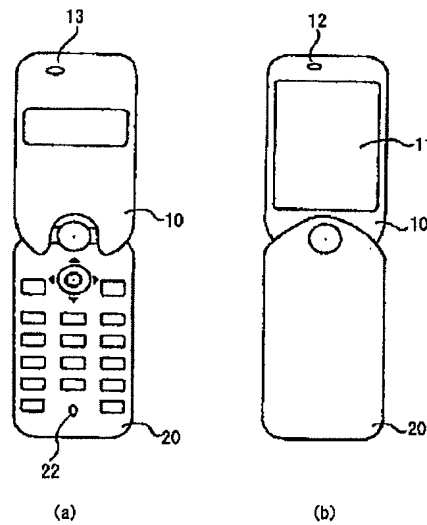
【図7】



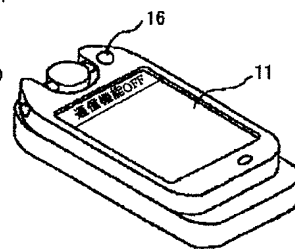
【図9】



【図10】

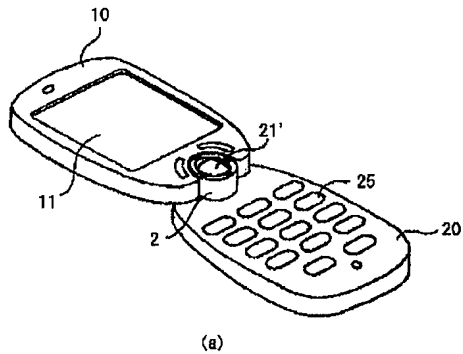


【図11】

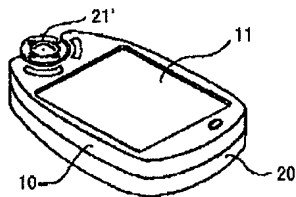




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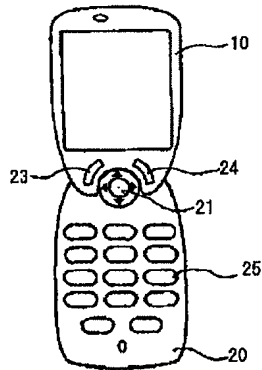


(a)

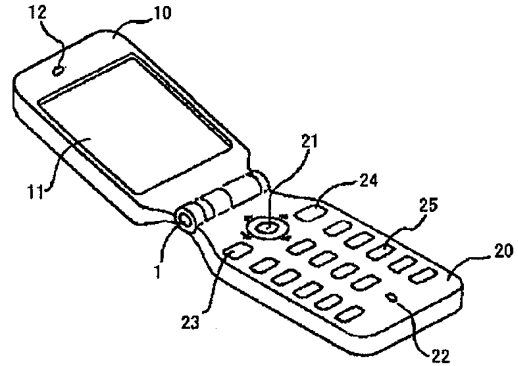


(b)

【図12】



【図13】



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(72) 発明者 南木 照男

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神奈川県横浜市港北区綱島東四丁目3番1

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(71)**Applicant**

**Identification Number**000005821

**Name**Matsushita Electric Industrial Co., Ltd.

**Address**1006, Kadoma, Kadoma-shi, Osaka

(72)**Inventor(s)**

**Name**Woods \*\*\*\*

**Address**4-3-1, Tsunashima-higashi, Kohoku-ku, Yokohama-shi, Kanagawa-ken Inside of Matsushita Communication Industrial Co., Ltd.

(72)**Inventor(s)**

**Name**Toyota Ryuichi

**Address**4-3-1, Tsunashima-higashi, Kohoku-ku, Yokohama-shi, Kanagawa-ken Inside of Matsushita Communication Industrial Co., Ltd.

(72)**Inventor(s)**

**Name**Teruo Namiki

**Address**4-3-1, Tsunashima-higashi, Kohoku-ku, Yokohama-shi, Kanagawa-ken Inside of Matsushita Communication Industrial Co., Ltd.

(74)**Attorney**

**Identification Number**100099254

**Patent Attorney**

**Name**Role Masaaki (outside trinominal)

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(57) **Abstract**

**Technical problem** Even if it changes the relative angle of the 1st case and the 2nd case by how to have apparatus or a use, it makes it possible to switch a display direction according to the angle, and is not concerned with the physical relationship of the 1st case and the 2nd case, but the foldaway portable electronic apparatus which secured good operativity is provided.

**Means for Solution** The 1st case 10 provided with a reception part and the indicator 11, and the 2nd case 20 provided with a transmission section, connecting mutually with a hinge, so that folding is possible -- further -- the surface of a reception part or a transmission section -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around the vertical axis of rotation 2, When the 1st case 10 rotates from a state or the state where it closed which opened apparatus, a display direction of the main display 11 on the 1st case 10 is switched with the angle of rotation and holding

angle of apparatus.

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**Claim(s)**

**Claim 1**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, A foldaway portable electronic apparatus characterized by switching 90 degrees of display directions of an indicator from the direction of the rotation forward when it rotates to a circumference of an axis and an angle of the 1st case and the 2nd case to make becomes 90 degrees.

**Claim 2**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, A foldaway portable electronic apparatus characterized by switching a display direction of an indicator up and down when it closes so that the 1st case may be reversed.

**Claim 3**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, A foldaway portable electronic apparatus having having switched 90 degrees of display directions of an indicator when it has again from horizontal length in the state where it closed so that the 1st case might be reversed so that it may become longwise so that the direction of an indicator may become oblong from vertical length or.

**Claim 4**The 1st case provided with an indicator.

A final controlling element which consists of a ten key, a selection key, etc.

When a selection key which is the foldaway portable electronic apparatus provided with the above, and was provided in said 2nd case is used as the 1st selection key, it has the 2nd selection key in a position which is not covered with the 1st case that rotated around a vertical axis on the surface of a final controlling element.

**Claim 5**The 1st case provided with an indicator.

A final controlling element which consists of a ten key, a selection key, etc.

it is the foldaway portable electronic apparatus provided with the above -- the surface of a final controlling element -- abbreviated -- it has a selection key on the vertical axis of rotation

**Claim 6**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, the surface of an indicator or a final controlling element -- abbreviated -- a foldaway portable electronic apparatus characterized by having a rotation control function in predetermined angle of rotation about a circumference of a vertical axis.

**Claim 7**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, the surface of an indicator or a final controlling element -- abbreviated -- a foldaway portable electronic apparatus characterized by having a rotation-stops function in predetermined angle of rotation about a circumference of a vertical axis.

**Claim 8**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, A foldaway portable electronic

apparatus having a sub display in an opposite hand of a main display of the 1st case.

**Claim 9**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- it being constituted pivotable around a vertical axis and in a \*\*\*\*\* portable electronic apparatus which has a communication function, A foldaway portable electronic apparatus characterized by switching a function of a loudspeaker and a receiver in the state where it has been opened and arranged so that a main display on the 1st case may become an opposite hand to a final controlling element of the 2nd case.

**Claim 10**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- it being constituted pivotable around a vertical axis and in a \*\*\*\*\* portable electronic apparatus which has a communication function, A foldaway portable electronic apparatus enabling a change in the mode which does not use only a communication function.

**Claim 11**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- it being constituted pivotable around a vertical axis and in a \*\*\*\*\* portable electronic apparatus which has a communication function, A foldaway portable electronic apparatus having a feature button in connection with dispatch and clear back in the 1st case side.

**Claim 12**connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, A foldaway portable electronic apparatus rotating to a circumference of an axis and switching a display style of an indicator according to an angle of the 1st case and the 2nd case to make.

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## Detailed Description of the Invention

### 0001

**Field of the Invention**This invention portable electronic apparatus, such as a cellular phone and a Personal Digital Assistant, especially the 1st case provided with an indicator, and the 2nd case provided with a final controlling element, the surface of an indicator or a final controlling element -- abbreviated -- according to direction of an indicator, the display direction of an indicator is mutually switched to the circumference of a vertical axis about the foldaway portable electronic apparatus made pivotable, and operativity is secured.

### 0002

**Description of the Prior Art**the conventional foldaway portable electronic apparatus, for example, foldaway cellular phone. As shown in drawing 13, the 2nd case 20 that has the 1st case 10 and transmission section which have a reception part and an indicator, and a final controlling element, That by which it connects with the hinge 1 and the opening and closing to a sliding direction are enabled, indicator shape is longwise so that the largest possible display surface product may be taken to a longwise case, and the final controlling element is arranged near the opening-and-closing axis on the 2nd case 20 is common.

### 0003

**Problem(s) to be Solved by the Invention**However, when transmission and reception of a picture, and recording and playback were performed, in the method of displaying an oblong picture on a longwise indicator, the technical problem that a display surface product could not fully be used occurred.

**0004**the 1st case -- a final controlling element -- abbreviated -- when it was made to rotate around a vertical axis, for the wrap reason, arrangement of the selection key was restricted in the selection key for a part of 1st case, and the technical problem that a miniaturization was impossible occurred.

**0005**Even if this invention changes the relative angle of the 1st case and the 2nd case depending on the display direction of apparatus, or how to have in view of the above technical problems, It makes it possible to switch a display direction according to the angle, is not concerned with the physical relationship of the 1st case and the 2nd case, but aims at providing the foldaway portable electronic apparatus which secured good operativity.

**0006**

**Means for Solving the Problem**The invention of this application according to claim 1 the 1st case provided with an indicator, and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, When it rotates to a circumference of this axis and an angle of the 1st case and the 2nd case to make becomes 90 degrees, it is considered as a foldaway portable electron switching 90 degrees of display directions of an indicator from the direction of the rotation forward.

**0007**By suiting a main display which became oblong when displaying an oblong picture, for example on a longwise screen like a cellular phone according to this composition, and rotating 90 degrees of the 1st case, and switching a display oblong, It can make the most of a viewing area of a main display, and a user can be provided with a legible picture.

**0008**The invention of this application according to claim 2 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, When it closes so that the 1st case may be reversed, it is considered as a foldaway portable electronic apparatus switching a display direction of an indicator up and down.

**0009**According to this composition, even if the 1st case is reversed and it closes from an open state, when the direction of a screen switches, it can continue using as it is, without having again.

**0010**The invention of this application according to claim 3 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, When it has again from horizontal length so that it may become longwise so that the direction of an indicator may become oblong from vertical length or, it is considered as a foldaway portable electronic apparatus switching 90 degrees of display directions of an indicator.

**0011**According to this composition, optimal display direction can be chosen to how to have apparatus and display information.

**0012**The invention of this application according to claim 4 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, a time of using as the 1st selection key a selection key provided in said 2nd case -- the surface of a final controlling element -- abbreviated -- it is considered as a foldaway portable electronic apparatus having the 2nd selection key in a position which is not covered with the 1st case that rotated around a vertical axis.

**0013**According to this composition, when said 1st case rotates 90 degrees from a state or the state where it closed which opened apparatus, for example, wrap possibility becomes high about a selection key which has the 1st case in the conventional position, but in such a case, operativity is securable.

**0014**The invention of this application according to claim 5 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis -- the surface of a final controlling element -- abbreviated -- it is considered as a

foldaway portable electronic apparatus having a selection key on the vertical axis of rotation.

**0015**According to this composition, since a selection key has always appeared in the surface in all the physical relationship usable in the 1st case and the 2nd case, good operativity is securable.

**0016**The invention of this application according to claim 6 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, the surface of an indicator or a final controlling element -- abbreviated -- it is considered as a foldaway portable electronic apparatus having a rotation control function in predetermined angle of rotation about a circumference of a vertical axis.

**0017**According to this composition, on structure of the axis of rotation, when angle of rotation has restriction, it can regulate so that the 1st case and the 2nd case may not rotate to an impossible angle, and the axis of rotation can be protected.

**0018**The invention of this application according to claim 7 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, the surface of an indicator or a final controlling element -- abbreviated -- it is considered as a foldaway portable electronic apparatus having a rotation-stops function in predetermined angle of rotation about a circumference of a vertical axis.

**0019**According to this composition, without the 1st case rotating while in use in a position of the 1st frequently-used case, such as 90 degrees and 180 degrees, it can stop, and can be stabilized and used.

**0020**The invention of this application according to claim 8 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, it is considered as a foldaway portable electronic apparatus having a sub display in an opposite hand of a main display of the 1st case.

**0021**According to this composition, also where the 1st case and the 2nd case are folded up, the date, time and an E-mail, a receiving condition of a message, and cell capacity can be known.

**0022**The invention of this application according to claim 9 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus which has the communication function constituted pivotable around a vertical axis, It is in a state opened and arranged so that a main display on the 1st case may become an opposite hand to a transmission section of the 2nd case, and it is considered as a foldaway portable electronic apparatus switching a function of a loudspeaker and a receiver.

**0023**When rotating 180 degrees to a circumference of an axis vertical to the final controlling element surface from a state which closed the 1st case and the 2nd case according to this composition, or when it opens to a circumference of an opening-and-closing axis from a state which was made to reverse the 1st case and was closed, the transmission-and-reception talk can be carried out as a telephone.

**0024**The invention of this application according to claim 10 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus which has the communication function constituted pivotable around a vertical axis, It is considered as a foldaway portable electronic apparatus enabling a change in the mode which does not use only a communication function.

**0025**According to this composition, reproduction of a still picture or video, document preparation, a draft of an E-mail, etc. can be performed, without making trouble for the surrounding person also at a place with much people in a train etc.

**0026**The invention of this application according to claim 11 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of the 1st case or the 2nd case -- abbreviated -- in a foldaway portable electronic apparatus which has the communication function constituted pivotable around a vertical axis, It is considered as a foldaway portable electronic apparatus having a feature button in connection with dispatch and clear back in the 1st case side.

**0027**According to this composition, also in the state where reversed the 1st case and it closed, dispatch and operation in connection with clear back can be performed.

**0028**The invention of this application according to claim 12 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in a foldaway portable electronic apparatus constituted pivotable around a vertical axis, It is considered as a foldaway portable electronic apparatus rotating to a circumference of an axis and switching a display style of an indicator according to an angle of the 1st case and the 2nd case to make.

**0029**According to this composition, it rotates to a circumference of an axis, and according to an angle of the 1st case and the 2nd case to make, a display style of an indicator can be switched and a user can be provided with a legible picture.

**0030**

**Embodiment of the Invention**Hereafter, an embodiment of the invention is described using drawing 1 - drawing 12.

**0031**Drawing 1 is a perspective view showing the composition of the foldaway portable electronic apparatus concerning an embodiment of the invention. In drawing 1, the foldaway portable electronic apparatus comprises the 2nd case 20 that has the main display 11, the 1st case 10 that has the loudspeaker 12 etc., and a final controlling element and the microphones 22, such as the selection key 21, the dispatch button 23, the clear back button 24, and the ten key 25, and the hinge 1 and the axis of rotation 2.

**0032**and the 1st case 10 and the 2nd case 20 -- the hinge 1 -- mutual -- folding -- being possible (based on rotation of the direction of A) -- connecting -- further -- the surface of the final controlling element 21 -- abbreviated -- the surroundings of a vertical axis -- being pivotable (based on rotation of the direction of B) -- it is constituted.

**0033**Drawing 2 is a figure showing the state where the display direction of the main display by the angle of how to have the foldaway portable electronic apparatus shown in drawing 1, the 1st case, and the 2nd case is switched.

**0034**Drawing 2 (a) is what shows the display direction of the main display 11 in the state where the 1st case 10 was opened, Drawing 2 (b) shows the display direction in the state where the angle of 90 degrees was made to rotate the 1st case 10 to the 2nd case 20, detected the angle of 90 degrees by the rotation detection function (not shown) added to the axis of rotation 2, and has switched the display direction oblong according to the main display 11 which became oblong.

**0035**Drawing 3 is what shows the display direction in the state where it closed so that the 1st case 10 might be reversed and the main display 11 might serve as a side front, By detecting that 180 degrees of the 1st case 10 is rotating by the rotation detection function (not shown) added to the axis of rotation 2, and combining the detection function (not shown) of a closed state, Direction of the 1st case 10 was detected, and it has switched so that it may look normally to a user, and a display may be reversed to a sliding direction as compared with drawing 2 (a).

**0036**Drawing 4 changed how to have from the state of drawing 3, and has switched the display direction oblong according to the main display 11 which became oblong using the display direction change key 16 in the state where 90 degrees of the whole apparatus was rotated.

**0037**In the composition of the foldaway portable electronic apparatus shown in drawing 1, drawing 5 is a perspective view at the time of making it constitute so that it may have the 2nd selection key (the 2nd final controlling element).

**0038**the surface of the final controlling element which has the 1st case 10 in the 2nd case 20 -- abbreviated -- the 1st case 10 interfering the selection key (the 1st selection



key) 21 with cover operation depending on the angle, when it rotates around a vertical axis, but. By having the 2nd selection key 14 in the position which is not influenced by rotation of the 1st case 10, always good operativity is securable.

**0039**the surface of the transmission section which drawing 6 (a) and drawing 6 (b) require for an embodiment of the invention -- abbreviated -- it is a figure showing the composition of the foldaway portable electronic apparatus which has a selection key on the vertical axis of rotation.

**0040**As shown in drawing 6 (a) and drawing 6 (b), while securing always good operativity by having selection key 21' on the axis of rotation 2, the 2nd case 20 can be miniaturized by reducing conventionally the selection keys 21 which suited the 2nd case 20.

**0041**in the composition of the foldaway portable electronic apparatus which showed drawing 1 drawing 7 -- the surface of an indicator or a final controlling element -- abbreviated -- it is an enlarged drawing of a shaft part showing having a rotation control function with predetermined angle of rotation about the circumference of a vertical axis.

**0042**As shown in drawing 7, it can restrict by providing a projection in each of the axis-of-rotation upper part 3 and the axis-of-rotation lower part 4 so that the axis-of-rotation upper part 3 and not less than 180 degrees of rotations between axis-of-rotation lower 4 may not be rotated.

**0043**in the composition of the foldaway portable electronic apparatus which showed drawing 1 drawing 8 -- the surface of an indicator or a final controlling element -- abbreviated -- it is an enlarged drawing of a shaft part showing having a rotation-stops function in predetermined angle of rotation about the circumference of a vertical axis.

**0044**As shown in drawing 8, by providing a crevice at intervals of 90 degrees, and providing heights in the axis-of-rotation upper part 3 at intervals of 90 degrees as well as the axis-of-rotation lower part 4, rotation with the axis-of-rotation upper part 3 and the axis-of-rotation lower part 4 can stop at intervals of 90 degrees, and can generate a click feeling.

**0045**In the composition of the foldaway portable electronic apparatus shown in drawing 1, drawing 9 is a perspective view at the time of making it constitute so that it may have a sub display in the opposite hand of the main display of the 1st case.

**0046**As shown in drawing 9, also where the 1st case 10 and the 2nd case 20 are folded up, the date, time and an E-mail, the receiving condition of a message, and cell capacity can be known by forming the sub display 15 in an opposite hand in the main display 11 of the 1st case 10.

**0047**Drawing 10 is a figure showing the state where made it reversed and the 1st case 10 was opened in the foldaway portable electronic apparatus which has a communication function with the same composition as drawing 1, and (b) is the figure which looked at the apparatus of this state from the opposite hand.

**0048**When communicating in the state of drawing 10 (a) and the microphone 22 is brought to the mouth, in the reception part of the 1st case 10. Usually, since the receiver 13 is stationed so that the receiver which does sound emission of the ringer tone may come to close to his ears, when using it in such the state, it can communicate by switching this receiver's 13 function to a loudspeaker. When the state of drawing 10 (a) is returned to normal, normal communication can be performed if the receiver which switched to the loudspeaker 12 is returned to the receiver which is an original function. It does not assume communicating in the state of drawing 10 (b).

**0049**Drawing 11 is a figure in which showing the state where reversed the 1st case 10 and it closed in the foldaway portable electronic apparatus which has a communication function with the same composition as drawing 1, and showing signs that it has switched to the mode which does not use only a communication function by the long aggressiveness of the display direction change key 16. It does not depend on the long aggressiveness of the display direction change key 16, but the key for exclusive use switched to the mode which does not use only a communication function may be provided.

**0050**Although the function to perform playback of the still picture and video which were saved to apparatus in the foldaway portable electronic apparatus which has a function

which transmits, receives or plays **recording** a still picture and video is added, Since a message may be received during image restoration in spite of not needing a communication function in this function, it cannot be used in crowds, such as a train. However, apparatus can be used, without making trouble to the circumference also in a crowd by switching to the mode which does not use only a communication function.

**0051**In the foldaway portable electronic apparatus which has a communication function with the same composition as drawing 1, drawing 12 is a front view at the time of making it constitute so that it may have a feature button in connection with dispatch and clear back in the 1st case side.

**0052**As shown in drawing 12, by forming the dispatch button 23 and the clear back button 24 in the 1st case 10, Also in the state where reversed the 1st case 10 and it closed, dispatch and operation in connection with the function of clear back can be performed, and when only the part reduces the key mark by the side of the 2nd case 20, the space which adds a miniaturization or other functions can be secured.

### **0053**

**Effect of the Invention**As explained above, the invention of this application according to claim 1, connecting the 1st case provided with an indicator, and the 2nd case provided with a final controlling element so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, When it rotates to the circumference of an axis and the angle of the 1st case and the 2nd case to make becomes 90 degrees, use to have switched 90 degrees of display directions of the indicator from the direction of the rotation forward as the foldaway portable electronic apparatus by which it is characterized, and by this composition. For example, when displaying an oblong picture on a longwise screen like a cellular phone, when rotating 90 degrees of the 1st case, the main display which became oblong can be suited and a display can be switched oblong, and it can make the most of the viewing area of a main display, and a user can be provided with a legible picture.

**0054**The invention of this application according to claim 2 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, When it closes so that the 1st case may be reversed, it is considered as the foldaway portable electronic apparatus switching the display direction of an indicator up and down, It can continue using as it is, without having apparatus again by carrying out flip vertical of the display of a main display, when rotating 180 degrees of the 1st case by this composition.

**0055**The invention of this application according to claim 3 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, When it has again from horizontal length so that it may become longwise so that the direction of an indicator may become oblong from vertical length or, It is considered as the foldaway portable electronic apparatus switching 90 degrees of display directions of an indicator, and according to this composition, the optimal display direction can be chosen to how to have apparatus and display information.

**0056**The invention of this application according to claim 4 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, the time of using as the 1st selection key the selection key provided in said 2nd case -- the surface of a final controlling element -- abbreviated -- it being considered as the foldaway portable electronic apparatus having the 2nd selection key operation part in the position which is not covered with the 1st case that rotated around the vertical axis, and according to this composition. For example, when the 1st case rotates 90 degrees from the state or the state where it closed which opened apparatus, wrap possibility becomes high about the selection key which has the 1st case in the

conventional position, but in such a case, operativity is securable.

**0057**The invention of this application according to claim 5 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, the surface of a final controlling element -- abbreviated -- it being considered as the foldaway portable electronic apparatus having a selection key on the vertical axis of rotation, and according to this composition. Since the selection key operation part has always appeared in the surface in all the physical relationship usable in the 1st case and the 2nd case, good operativity is securable.

**0058**The invention of this application according to claim 6 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, Consider it as the foldaway portable electronic apparatus having a rotation control function in predetermined angle of rotation at the time of making it rotate to the circumference of an axis, and according to this composition. On the structure of the axis of rotation, when angle of rotation has restriction, it can regulate so that the 1st case and the 2nd case may not rotate to an impossible angle, and the axis of rotation can be protected.

**0059**The invention of this application according to claim 7 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, Consider it as the foldaway portable electronic apparatus having a click function in predetermined angle of rotation at the time of making it rotate to the circumference of an axis, and according to this composition. It can be stabilized and used, without the 1st case rotating while in use in the position of the 1st frequently-used case, such as 90 degrees and 180 degrees.

**0060**The invention of this application according to claim 8 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, It is considered as the foldaway portable electronic apparatus having a sub display in the opposite hand of the main display of the 1st case, and according to this composition, also where the 1st case and the 2nd case are folded up, the date, time and an E-mail, the receiving condition of a message, and cell capacity can be known.

**0061**The invention of this application according to claim 9 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- it being constituted pivotable around a vertical axis and in the foldaway portable electronic apparatus which has a communication function, In the state where it has been opened and arranged so that the main display on the 1st case may become an opposite hand to the transmission section of the 2nd case. Consider it as the foldaway portable electronic apparatus switching the function of a loudspeaker and a receiver, and according to this composition. the transmission section surface from the state which closed the 1st case and the 2nd case -- abbreviated -- when rotating 180 degrees to the circumference of a vertical axis, or when it opens to the circumference of an opening-and-closing axis from the state which was made to reverse the 1st case and was closed, the transmission-and-reception talk can be carried out as a telephone.

**0062**The invention of this application according to claim 10 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- it being constituted pivotable around a vertical axis and in the foldaway portable electronic apparatus which has a communication function, Consider it as the foldaway portable communication equipment enabling a change in the mode which does not use only a communication function, and according to this composition.

Reproduction of a still picture or video, document preparation, the draft of an E-mail, etc. can be performed without making trouble for the surrounding person also at a place with much people in a train etc.

**0063**The invention of this application according to claim 11 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- it being constituted pivotable around a vertical axis and in the foldaway portable electronic apparatus which has a communication function, It is considered as the foldaway portable electronic apparatus having a feature button in connection with dispatch and clear back in the 1st case side, and according to this composition, also in the state where reversed the 1st case and it closed, dispatch and operation in connection with clear back can be performed.

**0064**The invention of this application according to claim 12 the 1st case provided with an indicator and the 2nd case provided with a final controlling element, connecting so that folding is possible -- further -- the surface of an indicator or a final controlling element -- abbreviated -- in the foldaway portable electronic apparatus constituted pivotable around the vertical axis, Consider it as the foldaway portable electronic apparatus rotating to the circumference of an axis and switching the display style of an indicator according to the angle of the 1st case and the 2nd case to make, and according to this composition. It rotates to the circumference of an axis, and according to the angle of the 1st case and the 2nd case to make, the display style of an indicator can be switched and a user can be provided with a legible picture.

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#### **Brief Description of the Drawings**

**Drawing 1**The perspective view showing the composition of the foldaway portable electronic apparatus concerning an embodiment of the invention,

**Drawing 2**The figure showing the state where 90 degrees of display directions of the main display are switched to compensate for rotation of the 1st case, in the composition of the foldaway portable electronic apparatus of this invention shown in drawing 1,

**Drawing 3**The figure showing the state where the display direction of the main display is switched up and down, in the composition of the foldaway portable electronic apparatus of this invention shown in drawing 1,

**Drawing 4**The figure showing the state where 90 degrees of display directions of the main display are switched, in the composition of the foldaway portable electronic apparatus of this invention shown in drawing 1,

**Drawing 5**The perspective view at the time of making it constitute in the composition shown in drawing 1, so that it may have the 2nd selection key,

**Drawing 6**the surface of the transmission section concerning an embodiment of the invention -- abbreviated -- the figure showing the state where (a) has a display direction of a main display in the normal position, in the foldaway portable electronic apparatus which has a final controlling element on the vertical axis of rotation, and the figure for which (b) shows the state where the display direction of the main display is switched up and down,

**Drawing 7**The enlarged drawing at the time of making it constitute in the composition of the foldaway portable electronic apparatus shown in drawing 1, so that it may have a rotation control function in predetermined angle of rotation,

**Drawing 8**The enlarged drawing at the time of making it constitute in the composition of the foldaway portable electronic apparatus shown in drawing 1, so that it may have a rotation-stops function in predetermined angle of rotation,

**Drawing 9**The perspective view at the time of making it constitute in the composition of the foldaway portable electronic apparatus shown in drawing 1, so that it may have a sub display in the opposite hand of the main display of the 1st case,

**Drawing 10**(b) is a figure showing the state where (a) reversed the 1st case 10 in the foldaway portable electronic apparatus of this invention shown in drawing 1, and it opened, and the figure which looked at the apparatus of this state from the opposite

hand,

**Drawing 11**The figure showing signs that it has switched to the mode which does not use only the communication function of the foldaway portable electronic apparatus of this invention shown in drawing 1,

**Drawing 12**The perspective view at the time of making it constitute in the composition of the foldaway portable electronic apparatus shown in drawing 1, so that it may have a feature button in connection with dispatch and clear back in the 1st case side,

**Drawing 13**It is a figure showing the conventional foldaway portable electronic apparatus.

**Description of Notations**

- 1 Hinge
- 2 Axis of rotation
- 3 Axis-of-rotation upper part
- 4 Axis-of-rotation lower part
- 10 The 1st case
- 11 Main display
- 12 Loudspeaker
- 13 Receiver
- 14 The 2nd selection key
- 15 Sub display
- 16 Display direction change key
- 20 The 2nd case
- 21 Selection key
- 22 Microphone
- 23 Dispatch button
- 24 Clear back button
- 25 Ten key

The submitted reference was prepared by a foreign Patent Office, and is directed to a foreign counterpart application to the present US Patent Application. Consistent with Applicant's duty of disclosure under 37 CFR 1.56, Applicant recognizes that the Examiner may consider it relevant when making a patentability determination. However, this submission should not be misconstrued as an admission by the Applicant that the reference is either relevant or not relevant to patentability, especially since the reference was prepared by a foreign Patent Office that is governed by a different body of law than the USPTO.

Nevertheless, in the interest of full disclosure and good faith, Applicant submits the reference for consideration by the Examiner, and requests that the Examiner initial the attached Form PTO 1449, indicating the Examiner has considered this reference.

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#### Notification of Reasons for Refusal

Patent application number	Japanese Patent Application No. 2003 - 002657
Drafting date	July 14, 2008
Examiner	Yukihiro Uraguchi 3358 5G00
Representative of applicant	Akira Koike (and two others)
Applicable articles	Article 29 Paragraph 1, Article 29 Paragraph 2, Article 37

This application should be refused according to the following reasons. If any arguments on these reasons for refusal exist, please file an argument within 60 days from the sending date of this notification.

#### Reason

-- Reason 1 --

This application does not satisfy the requirements prescribed in article 37 of the Patent Law in the following points.

#### Note

With regard to the invention concerning claim 1 and the invention concerning claim 5 – 11, those have such the common structure that “with regard to “the portable display unit providing a body portion with substantially a rectangular parallelepiped shape and a cover portion having the opposed face with substantially the same size to the main face of the body portion, the supporting portion and the display portion are arranged longitudinally in the cover portion, the support member is engaged to the body portion through the first shaft which is perpendicular to the main face of the body portion at the position apart from the longitudinal intermediate position of the body portion and rotatable around the first shaft on the main face of the body portion, the display portion is engaged with the supporting portion through the second shaft which is perpendicular to the first shaft in the cover portion and rotatable around the second shaft, and the display panel is provided on the opposed face to the body portion”. However, for example as described in Published Patent Application No. 2002-135380, this structure is not new. (Please refer to “reason 2” mentioned below)

Thus, with regard to the invention concerning claim 1 and the invention concerning

claim 5 - 11, because the problem to be solved and the main portion therefor are different to each other, it is not recognized that those inventions satisfy the relationship prescribed in Patent Law Article 37 Item 1 and 2.

Further, it is not recognized that each invention satisfies the relationship prescribed in Patent Law Article 37 Item 3, 4 and 5 either.

Because this application violates the prescription of Patent Law Article 37, with regard to the invention concerning claims except claim 1 - 4, the examination on the requirement except Patent Law Article 37 is not performed.

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-- Reason 2 --

Because the invention relating to the following claims in this application, is an invention which could easily have been made, prior to the filing of the patent application, on the basis of an invention described in the following publications distributed in Japan or foreign countries prior to the filling of the patent application, or on the basis of an invention which could be utilized by the publics through the telecommunication lines, the right to the patent shall not be granted in accordance with the provision of the article 29, paragraph 1, item 3 of the Patent Law.

Note (please refer to the list of references for cited references)

Claim: 1

Cited references: 1

Remarks:

"the first housing 10" and "the second housing 20" in cited reference 1 are corresponding to "the display portion" and "the body portion" in the invention of this application, respectively.

Also, "the rotation shaft 2" described in cited reference 1 is corresponding to "the supporting portion" in the invention of this application because it is engaged with "the second housing 20" rotatably ("rotation in the direction to B") through the perpendicular shaft to the main face of "the second housing 20" at the position apart from the longitudinal intermediate position of "the second housing 20" and also engaged with "the first housing 10" rotatably ("rotation in the direction to A") through the shaft perpendicular to the shaft.

Also, because "the first housing 10" and "the rotation shaft 2" described in cited reference 1 are arranged longitudinally, and the main face of "the first housing 10" has substantially the same size as the main face of "the second housing 20" and can be faced with the main face of "the second housing 20", "the first housing 10" and "the rotation shaft 2" described in cited reference 1 are corresponding to "the cover portion having the opposed face with substantially the same size to the main face of the body portion".

-- Reason 3 --

Because the invention relating to the following claims in this application is an invention which could easily have been made, prior to the filing of the patent application, by a person with common knowledge in the art to which the invention pertains, on the basis of an invention described in the following publications distributed in Japan or foreign countries prior to the filling of the patent application, or on the basis of an invention which could be utilized by the publics through the telecommunication lines, the right to the patent shall not be granted in accordance with the provision of the

article 29, paragraph 2 of the Patent Law.

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Note (please refer to the list of references for cited references)

Claim: 1 - 4

Cited references: 1

Remarks:

Please refer to the reason 2.

Note that it is a design choice a person skilled in the art can select appropriately how the size of "the main display portion" is determined.

Also, with regard to a portable telephone, the configuration that can use a memory card is a well-known matter.

#### List of cited references

1. Published patent application No. 2002 - 135380

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#### Record of the result of the prior art references searched

Searched Field    IPC        H04M 1/02 - 1/23

#### Prior art document

1. Published patent application No. HEI 10 - 312334
2. Published patent application No. SHO 60 - 021636
3. Published patent application No. 2000 - 069158
4. Published patent application No. 2002 - 009907
5. Published patent application No. 2001 - 169166
6. Published patent application No. 2000 - 196720
7. Published patent application No. 2002 - 330203

As it was described in the reason for refusal, with regard to the invention concerning claim 5 - 11, the examination on the requirements except the requirement of the unity is not performed. However, because it is considered that the cited reference 1 - 5 are, in particular, relating to the patentability of the invention concerning these claims, please consider those disclosures of the cited references, as well as the reason for refusal pointing out the violation of article 37 when responding to the reason for refusal.

The record of the result of prior art reference searched is not the reason for refusal.

If there is an inquiry about the description of this reason for refusal or a hope of interview, please contact at the following.

Patent examination Fourth department Telephone communication  
Yukihiro Uraguchi

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TEL. 03 (3581) 1101 Extension 3525

FAX 03 (3580) 7035



Director/Deputy		
Primary examiner/Deputy	Shinichi Yajima	9060
Examiner	Yukihiro Uraguchi	3358
Assistant Examiner		

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